

# **Environmental Assessment for the Improvements and Repair to Forty-Niner Avenue**

**Holloman Air Force Base, New Mexico**



**June 2005**

**49 CES/CEV  
Holloman Air Force Base**

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**Finding of No Significant Impact (FONSI) and  
Finding of No Practicable Alternative (FONPA)**

**1.0 Name of Action**

Improvements and Repair of Forty-Niner Avenue at Holloman Air Force Base (HAFB), New Mexico

**2.0 Description of the Proposed Action and Alternatives**

The 49th Civil Engineer Squadron (CES) proposes to improve and repair an approximately 5,000-foot section of Forty-Niner Avenue. The project would bring the affected section of road up to the standards of surrounding roadways. Based on existing conditions, the following issues and concerns have been identified by the 49 CES:

- (1) The surface of Forty-Niner Avenue is cracked and chipped throughout the proposed action area. The roadway will continue to degrade and eventually fail.
- (2) The current roadway consists of two lanes and is only 24 feet wide. This makes it difficult to pass slow-moving vehicles, such as munitions trucks. Additionally, any blockage of a lane leaves no room for bypass, causing safety concerns and significant traffic delays.

Reasonable Alternatives, including the No Action Alternative, were developed for this Environmental Assessment (EA). Alternative A, the preferred alternative, involves the construction of two temporary bypass roads constructed of recycled crushed concrete. Traffic would be routed along these bypass roads as Forty-Niner Avenue was being milled and resurfaced and shoulders added. Alternative B does not have any temporary bypass roads. Traffic would be diverted to one lane and directed by flagmen as the other lane and shoulder were milled and resurfaced. Alternative C, No Action, would result in no construction activities taking place, and the roadway's continued deterioration.

**3.0 Environmental Impacts of the Proposed Action**

In accordance with requirements specified in 32 CFR Part 651 the EA has undergone an appropriate 30-day public comment period.

The results of the EA indicate that there would be no significant adverse environmental impacts resulting from the proposed action. This determination is based on the following:

- No endangered species are present in the project area. There would be no significant impact on the flora or fauna of the area.
- There would be no significant impact to the geology or soils of the project area.
- No cultural resources are present in the project area.
- Best Management Practices (BMPs) in the Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit, the July 2003 Construction

General Storm Water Permit, and/or the US Army Corps of Engineers (USACE) 401-404 permit are designed to prevent impacts to water quality and wetland areas. There would be no significant impact to the water quality of the area.

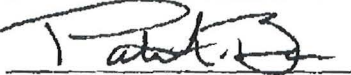
- Any impacts to air quality would be temporary in nature. There would be no significant impacts to the air quality of the area. A conformity analysis is not required, as Holloman AFB is located in an area which is in attainment for all National Ambient Air Quality Standards.
- The Environmental Restoration Project (ERP) sites near the project area would not be affected. There would be no impacts to the ERP sites near the project area.
- The project could remove several airfield obstructions as defined by Unified Facilities Criteria 03-260-01. There would be no adverse impacts to the landform use criteria of the area.
- This proposal, in combination with other past, present, or reasonably foreseeable actions in the region of influence, would result in increased storm water runoff volume and velocity. All construction, facility sites and associated infrastructure would minimize this increased runoff by implementing common construction practices.

The proposed action would cross two wetland areas. These areas are drainage ditches that are crossed by Forty-Niner Avenue. It would be impracticable to reroute the roadway away from the wetlands or to leave sections of the roadway adjacent to the wetlands in disrepair and unimproved. HAFB would pursue USACE 401-404 permitting, NPDES permitting and Construction General Storm Water permitting as necessary. These permits and the required BMPs would result in no significant impacts to the wetland areas.

#### 4.0 Conclusion

Based on the findings of this EA, conducted in accordance with the requirement of the National Environmental Policy Act, the Council on Environmental Quality regulations, and Air Force Instruction 32-7061 as promulgated in 32 Code of Federal Regulations Part 989, and after careful review of the potential impacts of the proposed action, I find that there would be no significant impact on the quality of the human or natural environment from implementation of the proposed action. Therefore I find no requirement to prepare an Environmental Impact Statement.

In accordance with Executive Order 11990, Protection of Wetlands, and the authority delegated in Secretary of the Air Force 791.1, including the written re-delegations accomplished pursuant to that Order, and taking the above information into account, I find that there is no practicable alternative to this action and that the proposed action includes all practicable measures to minimize harm to wetland environments.

  
PATRICK A. BURNS  
Brigadier General, USAF  
Director of Installations (A7)  
Air Combat Command

7/25/05  
DATE

# **Executive Summary**

## **Introduction**

The 49th Civil Engineer Squadron (CES) proposes to improve and repair an approximately 5000 linear foot section of Forty-Niner Avenue. The project would bring the affected section of road up to the standards of surrounding roadways. This Environmental Assessment (EA) has been prepared to analyze the potential direct, indirect and cumulative environmental consequences of the proposed action as required by the National Environmental Policy Act (NEPA). In addition, this document was prepared in accordance with the following:

- AFI 32-7061 The Environmental Impact Analysis Process (EIAP), 32 Code of Federal Regulations (CFR) 989
- Regulations established by the Council on Environmental Quality (CEQ), 40 CFR 1500-1508.

## **Purpose and Need for the Action**

Based on existing conditions, the following issues and concerns have been identified by the 49 CES.

- The surface of Forty-Niner Avenue is cracked and chipped throughout the proposed action area. The roadway will continue to degrade and eventually fail.
- The current roadway consists of two lanes and is only 24 feet wide. This makes it difficult to pass slow moving vehicles, such as munitions trucks. Additionally, any blockage of a lane leaves no room for bypass, causing safety concerns and significant traffic delays.

While the repair and improvement of Forty-Niner Avenue is the primary goal of this proposal, proper project planning may allow several concerns in the immediate area to be addressed. The following secondary concerns have been identified.

- Multiple airfield obstructions exist in the clear zone area south of Runway 16/34. These need to be removed to meet airfield criteria as per Unified Facilities Criteria (UFC) 03-260-01.
- Ponding occurs on the north side of Forty-Niner Avenue during periods of heavy rainfall, presenting safety and health concerns. Of particular concern are the areas immediately south of Runway 16/34 and between Bong Street and the access road for Building 810.

The issues and concerns presented above can be addressed in several ways. The alternatives considered are based upon the following factors.

- Traffic routing during construction.
- Timing of the project, including possible phasing of sections of the project.
- Airfield obstructions to be removed, left in place, or added and the process of obtaining airfield waivers for any obstructions.
- Effects to the storm water drainage system, Waters of the US and nearby jurisdictional wetland areas.

## **Proposed Actions and Alternatives**

The Preferred Alternative would divide the proposed action into two phases (see Figure 2, p. 6). The first phase would consist of a temporary bypass road, constructed of recycled crushed concrete, from west of the access road to Building 810 to south of Runway 16/34. The section of Forty-Niner Avenue would then be completely milled and resurfaced with the addition of 8 foot shoulders on each side. Upon completion of Phase 1, a second temporary bypass road, from south of Runway 16/34 to the guard shack, would be constructed. The current bridge for Forty-Niner Avenue would be widened to accommodate the larger road. The second section of Forty-Niner Avenue would then be completely milled and resurfaced with the addition of shoulders. Continuous two-way traffic would be maintained on the temporary bypass roads during construction activity.

Alternative B would divide the proposed action into two phases (see Figure 3, p. 8). One lane of Forty-Niner Avenue would be closed while construction proceeded on the other half of the roadway. Flagmen would be required from 0600 to 1700 to direct one-way traffic. Large vehicles would be forced to detour around the airfield, resulting in an estimated 30 to 45 minute additional travel time. No work on bridges or storm water culverts would be completed, leaving these issues for future projects.

Alternative C is the No Action Alternative. This would leave Forty-Niner Avenue and the surrounding environment in its existing condition. No construction would take place. The roadway would continue to deteriorate, eventually leading to roadway failure.

## **Summary of Potential Environmental Impacts**

The Proposed Actions would not affect any cultural resources, or any Environmental Restoration Program (ERP) sites. There would be no significant impact to the flora and fauna of the area. There would be no significant impacts to wetland habitat or wildlife. Impacts to air quality would be temporary in nature and are not significant.

The Proposed Actions would require a US Army Corps of Engineers (USACE) 401-404 permit to operate in Waters of the US. In addition, a National Pollutant Discharge Elimination System (NPDES) storm water construction general permit would be required if additional land disturbance exceeds 1 acre, including staging areas. Impacts from these actions would not be significant as long as accepted Best Management Practices (BMPs) are followed (see Section 2.3). Permanent impacts from the temporary bypass roads would be avoided by removing the recycled crushed concrete upon completion of the action. Several airfield obstructions could be removed during this project.

Alternative B would require a USACE 401-404 permit to operate in Waters of the US. A NPDES storm water construction general permit would be required if additional land disturbance exceeds 1 acre, including staging areas. No significant impacts would result as long as proper BMPs were in place during construction activities.

The No Action Alternative would not cause any significant impacts.

### **Wetland Areas**

The Proposed Actions would cross two wetland areas. These areas are drainage ditches that are crossed by Forty-Niner Avenue. It would be impracticable to reroute the roadway away from the wetlands or to leave sections of the roadway adjacent to the wetlands in disrepair and unimproved. Any required permits and the required BMPs would result in no significant impacts to the wetland areas.

# Contents

Executive Summary	I
List of Figures	ii
Acronyms	iii
Chapter 1.0 Purpose and Need for the Proposed Action	
1.1 Introduction	1
1.2 Need for Action	1
1.3 Project Goals and Objectives	2
1.4 Decision Options	3
1.5 Scope of Significant Issues	3
1.6 Permits	4
Chapter 2.0 Description of Proposed Action and Alternatives	
2.1 Introduction	5
2.2 Alternative Profiles	5
2.3 Best Management Practices	8
2.4 Eliminated Alternatives	10
Chapter 3.0 Affected Environment	
3.1 Introduction	13
3.2 Biological Resources	13
3.3 Geology	13
3.4 Water Quality	14
3.5 Air Quality	16
3.6 Cultural Resources	16
3.7 Environmental Restoration Project Sites	16
3.8 Land Use Criteria	17
3.9 Waste Generation	19
Chapter 4.0 Environmental Consequences	
4.1 Introduction	20
4.2 Impacts of Alternative A	20
4.3 Impacts of Alternative B	22
4.4 Impacts of Alternative C	24
Chapter 5.0 Cumulative Environmental Impacts	
5.1 Introduction	26
5.2 Irreversible and Irretrievable Commitment of Resources	26
References Cited	27
List of Preparers	29

## **List of Figures**

Figure 1 Holloman Air Force Base and Affected Area	2
Figure 2 Preferred Alternative	6
Figure 3 Alternative B: Lane Closure	8
Figure 4 Alternative D: One Bypass Road	11
Figure 5 Alternative E: Parallel Construction	12
Figure 6 Elevation Contours	14
Figure 7 Wetland Areas	15
Figure 8 Environmental Restoration Program Sites	17
Figure 9 Land Use	18

# Acronyms

49 CES	49th Civil Engineer Squadron
AFH	Air Force Handbook
AFI	Air Force Instructions
AICUZ	Air Installation Compatible Use Zone
BASH	Bird-Aircraft Strike Hazard
BEAR	Basic Expeditionary Airfield Resources
BMPs	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DD	Decision Document
DNL	Day-Night Average A-Weighted Sound Level
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EPA	Environmental Protection Agency
ERP	Environmental Restoration Program
HAFB	Holloman Air Force Base
MAJCOM	Major Command
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NMED	New Mexico Environment Department
NOI	Notice of Intent
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
UFC	Unified Facilities Criteria
USACE	US Army Corps of Engineers
USAF	United States Air Force
WWTP	Wastewater Treatment Plant

## **1.0 Purpose of and Need for Action**

### **1.1 Introduction**

The 49 CES proposes to improve and repair an approximately 5,000-foot section of Forty-Niner Avenue as shown in Figure 1. The project would bring the affected section of road up to the standards of surrounding roadways. This EA has been prepared to analyze the potential direct, indirect, and cumulative environmental consequences of the proposed action as required by the National Environmental Policy Act (NEPA). In addition, this document was prepared in accordance with the following:

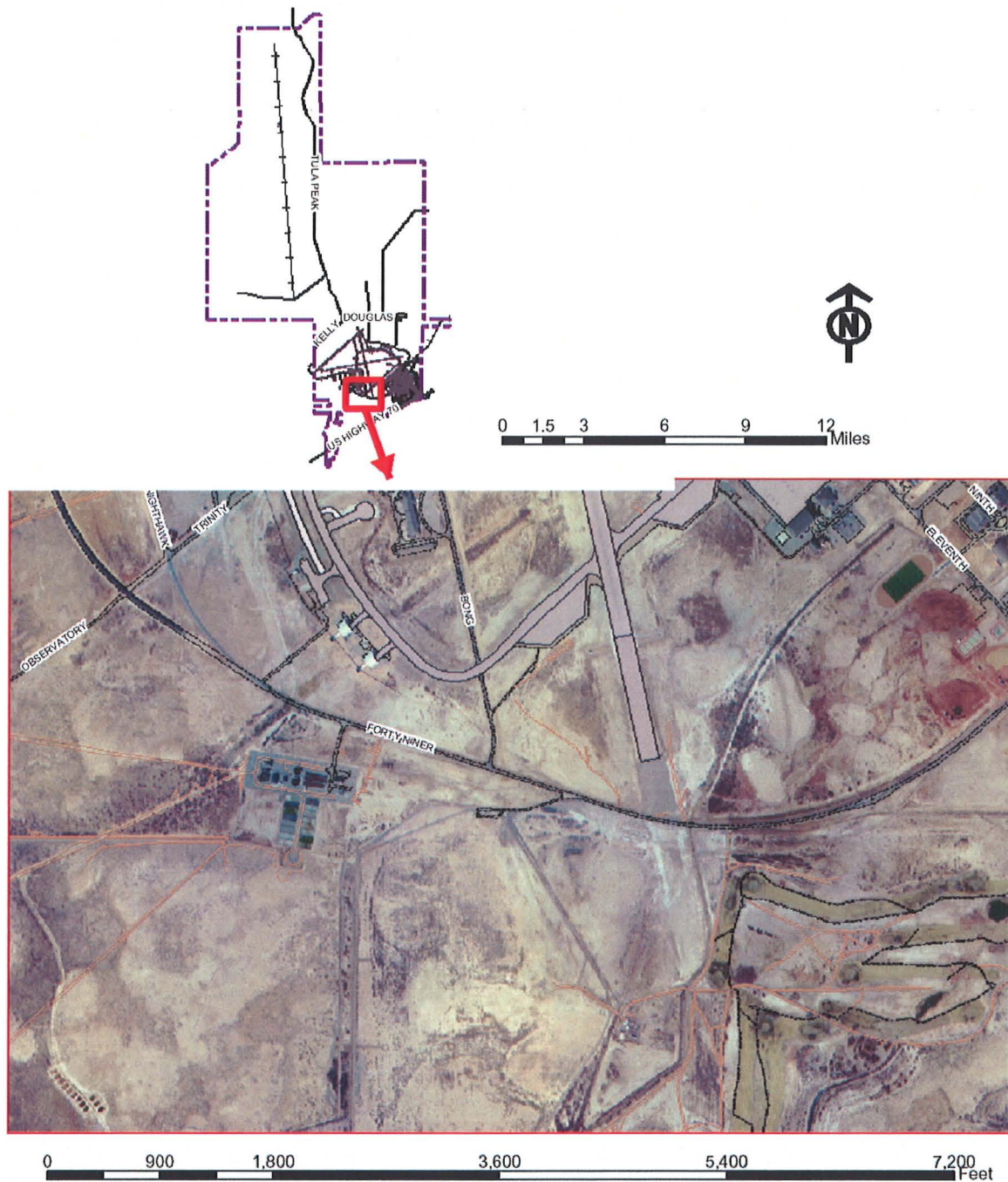
- AFI 32-7061 The EIAP, 32 CFR 989
- Regulations established by the CEQ, 40 CFR 1500-1508.

### **1.2 Need for Action**

Based on existing conditions, the following issues and concerns have been identified by the 49 CES/CECP.

- The surface of Forty-Niner Avenue is cracked and chipped throughout the proposed action area. The roadway will continue to degrade and eventually fail.
- The current roadway consists of two lanes and is only 24 feet wide. This makes it difficult to pass slow moving vehicles, such as munitions trucks. Additionally, any blockage of a lane leaves no room for bypass, causing safety concerns and significant traffic delays.

The proposed project area is identified in Figure 1.



**Figure 1 Holloman Air Force Base and Affected Area**

### **1.3 Project Goals and Objectives**

In order to meet the immediate concern of roadway failure, the surface of Forty-Niner Avenue needs to have 2 inches of asphalt milled and replaced by 2 inches of new asphalt. This needs to be done with minimum disturbance to traffic flow.

The addition of 8 foot asphalt shoulders on each side of the road would upgrade the high-travel roadway; keep slow moving vehicles from impeding the normal traffic flow, and increase roadway safety. These shoulders would also allow future road maintenance to proceed with less interference to traffic.

Other issues and concerns located in the immediate project area could be remedied with proper project planning. These secondary goals are identified below.

- Multiple airfield obstructions exist in the clear zone area south of Runway 16/34. These need to be removed to meet airfield criteria as per UFC 03-260-01, Airfield and Heliport Planning and Design Criteria.
- Ponding occurs on the north side of Forty-Niner Avenue during periods of heavy rainfall. These ponds present health hazards due to mosquito breeding and safety hazards to aircraft due to Bird-Aircraft Strike Hazards (BASH) and airfield obstruction violations. Of particular concern are the areas immediately south of Runway 16/34 and between Bong Street and the access road for Building 810.

#### **1.4 Decision Options**

The issues and concerns presented in Section 1.2 can be met in several ways. The alternatives considered are based upon the following factors.

- Traffic routing during construction.
- Timing of the project, including possible phasing of sections of the project.
- Airfield obstructions to be removed, left in place, or added and the process of obtaining airfield waivers for any obstructions.
- Effects to the storm water drainage system, Waters of the US and nearby jurisdictional wetland areas.

#### **1.5 Scope of Significant Issues**

Scoping is defined by 40 CFR 1501.7 as an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. The result is a determination of the range of actions, alternatives, and impacts to be considered during the analysis process. The effects of this proposed action are not anticipated to reach beyond HAFB; therefore, the scoping process was limited to HAFB personnel. Base project managers, engineers, and environmental subject matter experts were consulted before and during the analysis process. Additionally, the draft version of this EA was made available to the public for 30 days with a Notice of Availability published in the base newspaper on January 14 and January 28, 2005. The following issues have been identified and considered and apply to all areas that may be impacted by the proposed actions.

- Impacts on water quality with respect to storm water runoff and nearby jurisdictional wetlands and Waters of the US.
- Land use, as it pertains to the airfield requirements south of Runway 16/34.

- Impacts to the flora and fauna of the area, with special attention focused on threatened species.
- Impacts to the cultural resources of the area, both prehistoric and historic.
- Impacts to the geology of the area, particularly surface soils properties of the area.
- Impacts on air quality focused on the effects of fugitive dust.
- Impacts on ERP sites in the nearby area.

## **1.6 Permits**

Impacts to protected Waters of the US are limited by law. Discharges to these waters must be permitted under the US Environmental Protection Agency's (EPA) Clean Water Act (CWA) NPDES program. Impacts from this project could disturb greater than five acres, which would require permitting under the law. The permit requirement for this project would include the July 2003 Construction General Storm Water Permit. A USACE 401-404 permit would also be required since site work would occur across and possibly within two designated Waters of the US. Permit requirements would involve development of Storm Water Pollution Prevention Plans and submission of Notice(s) of Intent (NOI) forms to the EPA, and possibly schedule delays of over 7 days. These permits and NOIs would be required prior to construction.

## **2.0 Alternatives**

### **2.1 Introduction**

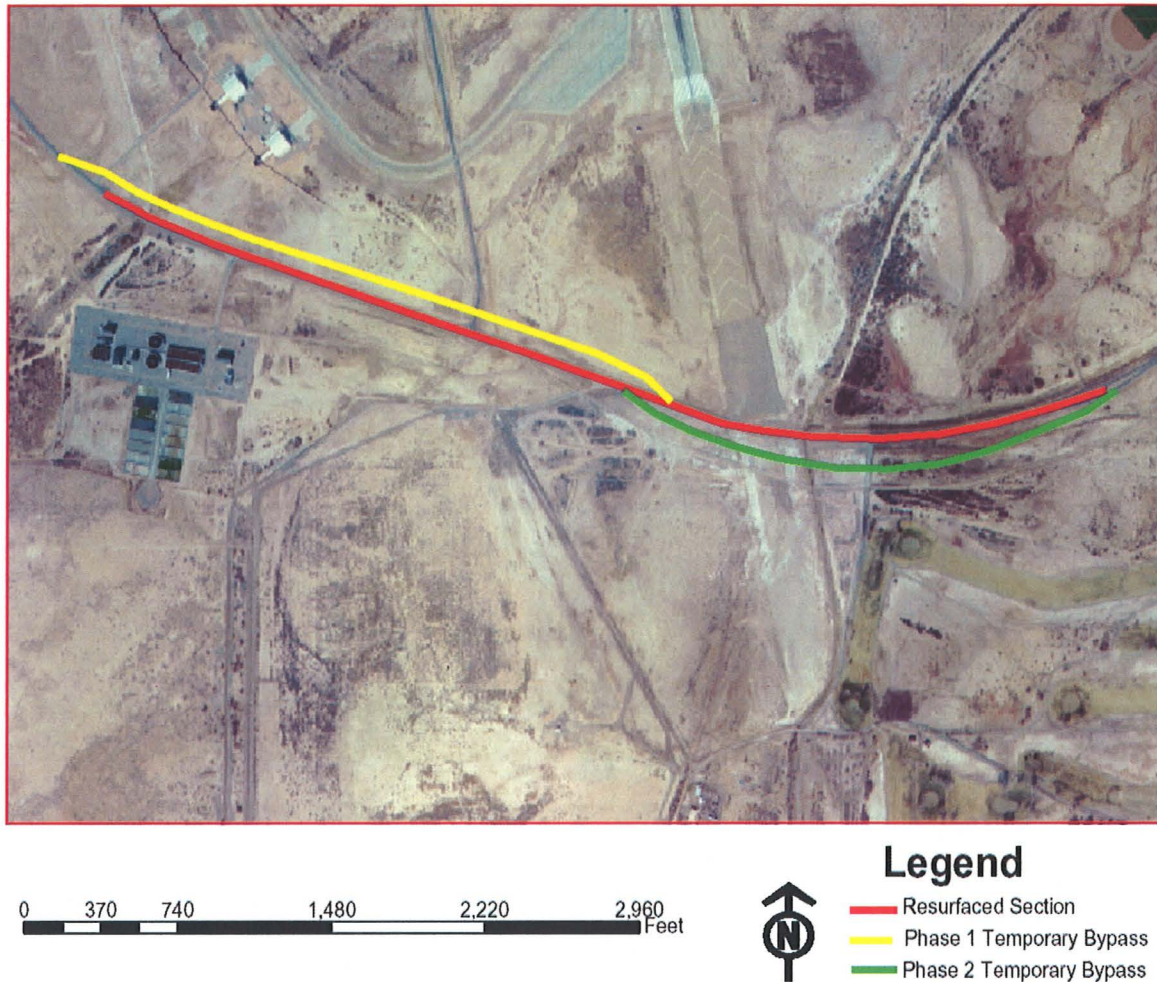
The surface of Forty-Niner Avenue is cracked and chipped throughout the proposed action area. The roadway needs to be repaired and improved to reduce safety concerns, traffic delays, and future maintenance problems. The following sections describe the reasonable alternatives, including the no action alternative, which have been developed for this proposal. Alternatives have been developed by combining the project objectives discussed in Chapter 1.0 with the environmental issues discussed in Chapter 4.0. Chapter 2 discusses BMPs that shall be implemented as appropriate to mitigate risk to the environment, as well as, alternatives considered but failing to meet project objectives or environmental standards.

### **2.2 Alternative Profiles**

#### **2.2.1 Preferred Alternative**

Alternative A would divide the proposed action into two phases (see Figure 2). The first phase would consist of constructing a temporary bypass road made of recycled crushed concrete from west of the access road to Building 810 to south of Runway 16/34, approximately 3,370 linear feet. A small bridge will be necessary over the drainage canal next to the access road to Building 810. Forty-Niner Avenue would then be completely milled and resurfaced with the addition of 8 foot shoulders on each side. The shoulders would require new sub-base and base before asphalt application. The bypass road would allow access to Bong Street and continuous two-way traffic during the resurfacing activity. Access to the Wastewater Treatment Plant (WWTP) would have to be maintained. The Phase 1 section of Forty-Niner Avenue would be reopened as soon as the resurfacing was completed.

Upon completion of Phase 1, a second temporary bypass road made of recycled crushed concrete, from south of Runway 16/34 to the guard shack, would be opened. This bypass road would be approximately 2,300 linear feet and require a new expanded culvert crossing over the drainage canal south of the runway. The current culvert crossing for Forty-Niner Avenue would be widened and failing concrete headwalls removed to accommodate the larger road. Larger culverts would be installed to allow storm water flow. The second section of Forty-Niner Avenue would then be completely milled and resurfaced with the addition of shoulders. Continuous two-way traffic would be maintained on the temporary bypass road during construction activity.



**Figure 2 Preferred Alternative**

The temporary bypass roads would be constructed of crushed concrete readily available from the concrete reuse area on base. To allow two-way traffic to travel safely, the bypass roads will be 24 feet wide. A depth of approximately 4 inches of crushed concrete will be necessary to maintain a compacted and level driving surface. This will require an estimated 1,700 cubic yards of crushed concrete.

Upon completion of the resurfacing operation, the bypass roads would be broken up and graded to the level of the surrounding terrain. The crushed concrete would be broken up and removed.

### **2.2.2 Alternative B: Lane Closure**

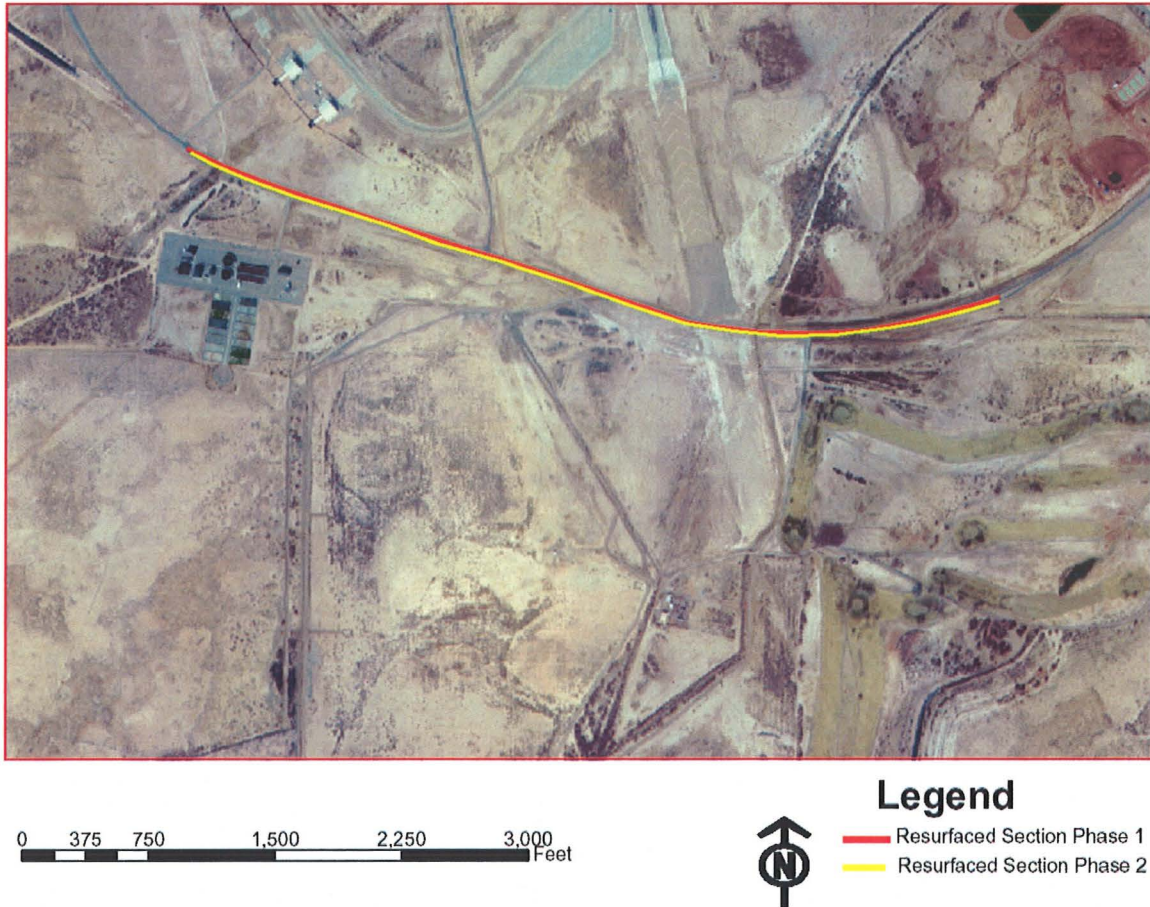
Alternative B would divide the project into two phases (see Figure 3). Phase 1 would begin with the closure of the southern half of Forty-Niner Avenue through the project area. The shoulder on the southern side of the road would then be enforced with a compacted sub-base material. Vehicles would be forced to one-way conditions with flagmen stationed at each end of the project to direct traffic. When the southern

shoulder construction was complete, the northern half would be closed and one-way traffic directed onto the southern half of Forty-Niner Avenue. Milling compacting, and resurfacing activities would then proceed on the northern half of the road and the shoulder. Vehicles would be forced to straddle the pavement and the newly enforced shoulder on the southern half to allow construction equipment to operate safely. Access to Bong Street would have to be maintained during construction.

Phase 2 would begin with the completion of the paving activities on the northern half of Forty-Niner Avenue and the northern shoulder. Vehicles would be diverted onto the new pavement, but would remain one-way with flagmen stationed to direct traffic. The shoulder would be needed to provide sufficient space to safely operate construction equipment. The southern half of the road would then undergo milling, compacting, and resurfacing activities. Access to the WWTP would have to be maintained during this time. When the southern half of the road and the southern shoulder are completed, Forty-Niner Avenue would be completely reopened to two lane traffic.

During the life of the project, traffic on the base would be affected. Large commercial trucks and heavy military vehicles would be forced around base, resulting in a 30 to 45 minute detour. Twenty-four hour flagmen would be cost prohibitive, resulting in the road being closed to all nonessential traffic between the hours of 1700 and 0600. During this time, personnel accessing Bong Street or the WWTP would be forced to navigate the construction area with no assistance. Access would only be granted from the western end of the project area.

The shoulders on both sides of Forty-Niner Avenue would not be continuous with this alternative. Sections of the road that bridge existing culverts or storm water drainages would remain at the existing 24 foot width. No new or larger culverts would be added. Warning signs or other types of cautionary devices would have to be installed in the areas without shoulders.



**Figure 3 Alternative B: Lane Closure**

### 2.2.3 Alternative C: No Action Alternative

Alternative C would leave Forty-Niner Avenue and the surrounding environment at its existing condition. No construction would take place. The roadway would continue to deteriorate, eventually leading to roadway failure.

### 2.3 Best Management Practices (BMPs)

All actions to take place under the alternatives presented must adhere to accepted BMPs. The environmental consequences considered in this assessment are presented with BMPs as a mandatory requirement for action. Examples of typical BMPs used on HAFB can be found in the New Mexico Department of Transportation's NPDES Manual, Storm Water Management Guidelines for Construction and Industrial Activities (NMDOT 2003). Failure to follow BMPs could result in environmental impacts not considered during this assessment.

Any CWA permitting will require implementation of certain construction BMPs to reduce water quality impacts. BMPs for this project will include standard erosion and sediment controls (silt fence, rock check dams, and/or sediment traps are preferred for

our highly erosive silty loam soils). Protection of downstream designated waters may best be accomplished by use of rock check dams and run-downs, which can also remain as permanent stabilization. Equipment storage shall be in an area or method to preclude leaking fuels or oils being conveyed to designated Waters of the US (e.g., bermed area, use of drip pans or absorbent pads, secondary containment for fuel/oil tanks, etc.). The storm water outfall in the area, Outfall Number 4, is designated and fitted with an auto-sampler for the categorical monitoring of typical industrial sector storm water runoff. Preferred BMPs for this project area include establishment of permanent erosion control, such as a gravel roadbed and surface water conveyance structures (culverts, rip-rap). BMP methods are summarized below.

- Culverts and/or rip-rap at drainage crossings - Several small drainage swales are noted within and downstream of the proposed project. The use of culverts and/or rip-rap at these crossings is recommended to manage or reduce erosive forces. This will protect water quality and increase the projected life of the project by reducing undercutting and sinkholes, thus ensuring improvements are not damaged by storm events. Any rock, shaping, or culverts recommended as a construction period measure should be left in place as a permanent erosion control feature.
- Scheduling - Completion of soil disturbing activities during the mid September to early June time period will avoid peak rainfall periods. Light rains in the dry seasons typically do not create the erosive runoff conditions seen in the summer monsoon season.
- Silt Fence - USACE specification Section 01356, "Storm Water Pollution Prevention Measures," is a good guide for silt fence construction. Properly installed with a backwire, tight stretch, proper material, and proper burial depth, it can be a very effective erosion control. Bench intervals with a 'V' configuration opening upstream should be limited to 300 feet along shallow slopes, less along steeper slopes.
- Gravel mulch and Rock Check Dams - Rock is a preferred BMP for erosion protection on HAFB soils. Gravel mulch, or a seeded mix of 3/4 inch crushed gravel is recommended as both a construction period and permanent erosion control measure. Rock check dams of angular 4 inch to 6 inch material spanning small revegetated swales and ditches with a minimum 1 foot depth can be surprisingly effective at retaining eroded material and retaining or re-establishing hydrology.
- Sedimentation pond(s) and Drainage Improvements - For this project it may be advantageous to provide long term drainage improvements as part of the short-term construction BMPs. These could, in fact, be performed in lieu of area-specific construction-period controls in some cases
- Hay bales are not recommended.

Although fugitive dust is not regulated by current air quality laws, BMPs will need to be employed due to the project location. Large amounts of airborne dust or smoke from

construction activities would impact airfield operations on Runway 16/34. Disturbed soil, particularly dirt and/or gravel roads, needs to be regularly maintained by water trucks. Impacts of open burning of noxious weeds will be minimized by employing the BMPs in the New Mexico Environment Department's (NMED) Smoke Management Program (NMED 2004).

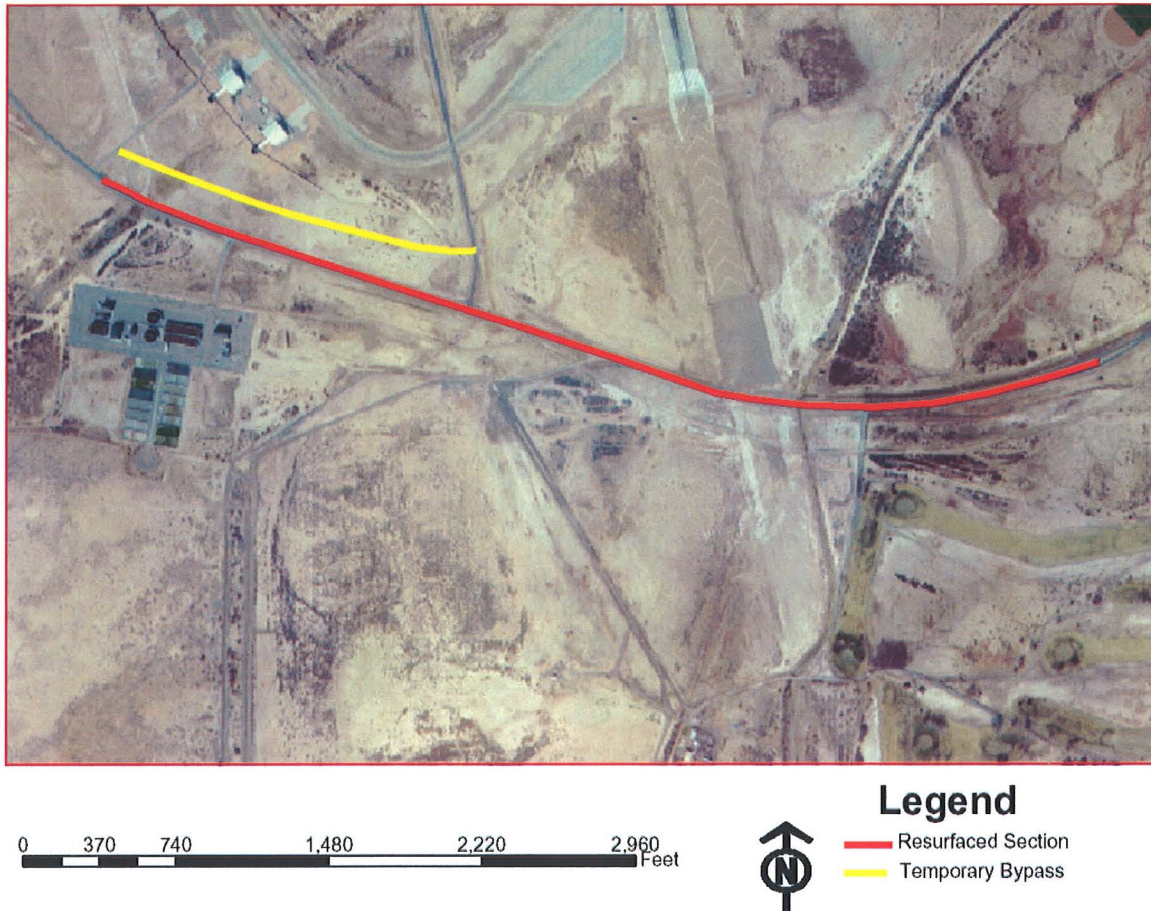
## **2.4 Eliminated Alternatives**

Alternatives considered reasonable for this project had to meet certain requirements. The condition of Forty-Niner Avenue had to be improved, in terms of driving surface, safety, and future maintenance needs. Access to mission critical areas of base, such as the 800 area and the WWTP, had to be maintained. The environmental issues and concerns discussed in the following chapters had to be met. The scope of the project also had to be appropriate for the available funding. The following two alternatives were found to be lacking in at least one of these categories. No further analysis was carried out on these alternatives.

### **2.4.1 Alternative D: One Bypass Road**

Alternative D, as shown in Figure 4, would consist of one phase. A temporary bypass road of crushed concrete would be constructed from the access road to Building 810 to Bong Street. This layer of crushed concrete would be 24 feet wide, approximately 2,100 feet long and 4 inches thick. Approximately 600 cubic yards of recycled concrete would be used for this bypass road. Forty-Niner Avenue would then be closed to all traffic. Milling, compaction, and resurfacing of the roadway and the shoulders would take place at one time.

During the construction period, no traffic would be permitted in the project area. Access to Bong Street would be maintained along the bypass road. Access to the WWTP would be along one of the small dirt roads that exist to the northwest of the WWTP. All traffic between the main and west sides of base would be forced to detour around the airfield, causing 30 to 45 minute delays. These delays could cause serious hindrances to base operations. Therefore, this alternative was not carried forth for further analysis.

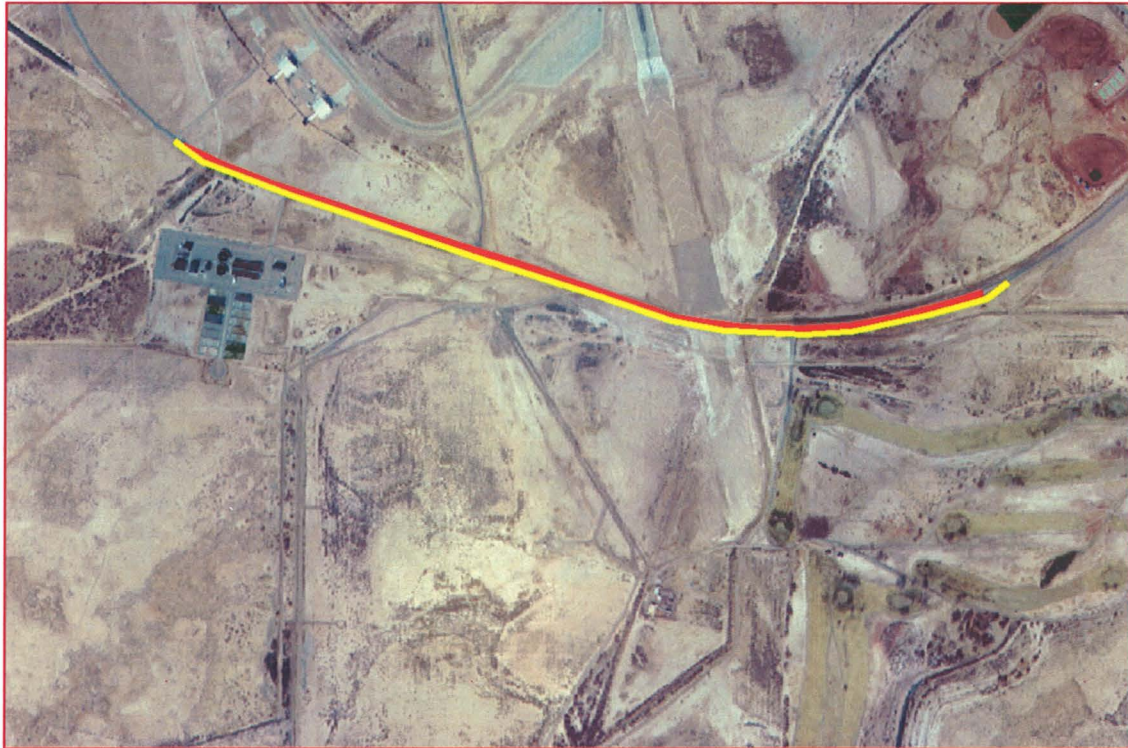


**Figure 4 Alternative D: One Bypass Road**

#### **2.4.2 Alternative E: Parallel Construction**

Alternative E, as shown in Figure 5, would consist of one phase. Improvements to Forty-Niner Avenue would take place in the area immediately south of the existing roadway. A new section of road would be constructed and connected to Forty-Niner Avenue at the ends of the project area. The existing portion of Forty-Niner Avenue would remain open to traffic throughout the project life, resulting in no traffic delays. No bypass roads would be needed, so the net amount of disturbed area would be approximately the same as the proposed alternative.

This alternative would require all new culverts and drainage fill. Large amounts of sub-base would be required to build up the roadway to avoid flooding. The old section of road would eventually have to be removed for safety and leveled to meet airfield criteria. This would exceed the amount funding available for this project. Therefore, this alternative was not carried forth for further analysis.



0 375 750 1,500 2,250 3,000 Feet



### Legend

- Abandoned Road
- New Road

**Figure 5 Alternative E: Parallel Construction**

## 3.0 Affected Environment

### 3.1 Introduction

This chapter discusses the existing environment that will be affected by the actions of the alternatives proposed, and is a snapshot of the environment as it currently exists, not of the effects of the proposed actions. The resources to be considered are biological, geology, water quality, air quality, cultural, ERPs, and existing landform use.

### 3.2 Biological Resources

The vegetation types in the area are four-wing saltbush (*Atriplex canescens*), alkali sacaton (*Sporobolus airoides*) shrubland, inland saltgrass (*Distichlis spicata*) grassland, four-wing saltbush/gyp dropseed grassland, and barren land (HAFB 2001). While there are some native shrub and/or grasslands, there are also scattered populations of invasive plants. Multiple neotropical migratory bird species utilize the area.

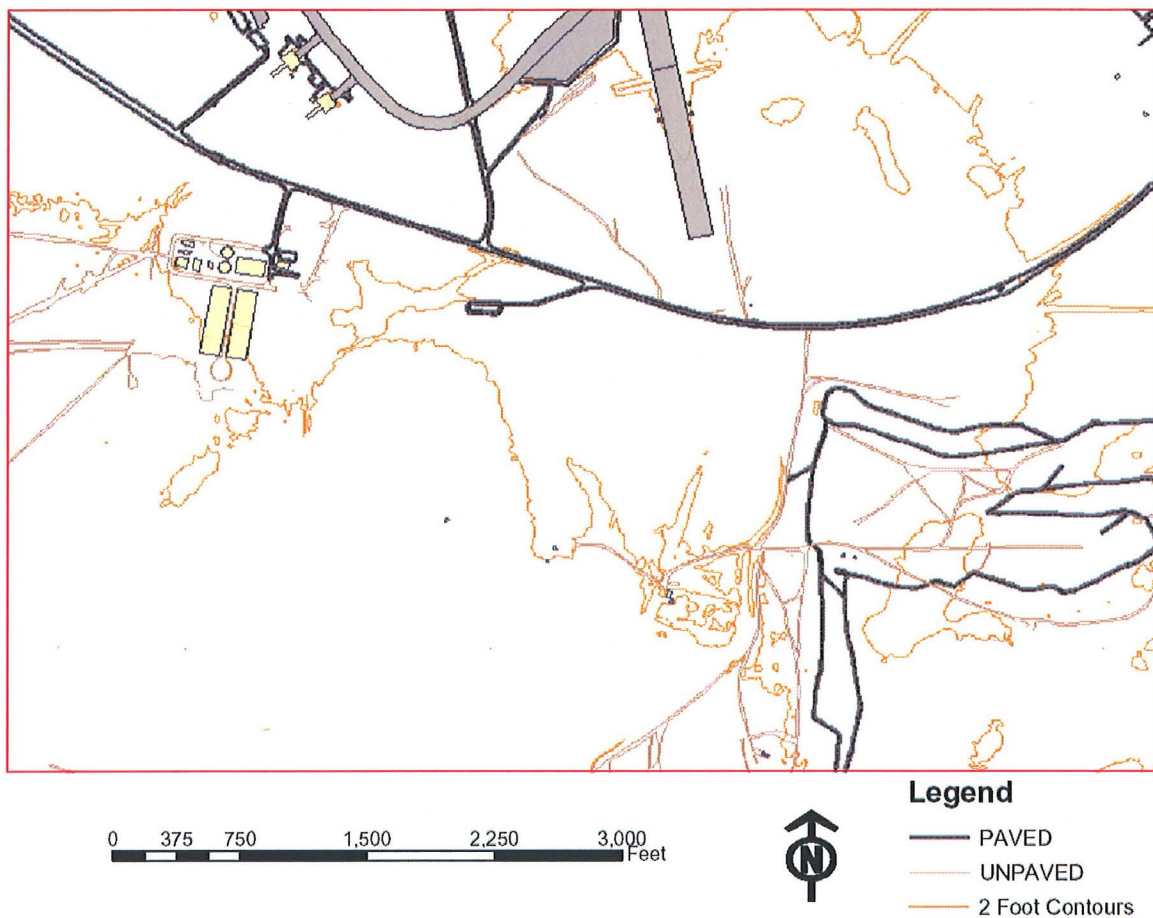
Much of the area is already semi-developed, having been previously graded, bladed, contoured, graveled, or otherwise modified from the original land condition. The semi-improved grounds are infested with invasive noxious weed plants, including African rue (*Peganum harmala*) and saltcedar (*Tamarix ramosissima*). There are no threatened, endangered or sensitive species in the area (HAFB 2001).

### 3.3 Geology

The soils in the area are Holloman-Gypsum land-Yesum complex. This complex consists of shallow and deep, well drained soils and areas of exposed gypsum (USDA 1981). The topography of the area is relatively flat, sloping gently from northeast to southwest with slopes less than 5 percent (see Figure 6).

Holloman soil makes up about 35 percent of the complex. The surface layer is typically a 3 inch layer of light brown very fine sandy loam. The upper 13 inches of substratum is pink very fine sandy loam which is very high in gypsum. The remaining 60 inches or more of substratum are typically white gypsum. Gypsum land accounts for another 30 percent of the complex. This soil consists of less than 1 inch of very fine sandy loam over white gypsum. Yesum soils make up another 20 percent of the complex. The surface layer is a light brown very fine sandy loam about 3 inches thick. The substratum consists of 9 inches of light brown fine sandy loam followed by 8 inches of pink very fine sandy loam, both of which are very high in gypsum. The remaining substratum is pink very fine sandy loam. This soil complex is calcareous throughout and mildly alkaline. Permeability and available water capacity are moderate. Fine gypsum crystals are abundant throughout the profile.

The area has been graded and improved multiple times. Multiple dirt access roads cross through the area, resulting in compacted top soils. Little, if any, of the surface area throughout the project is untouched land.



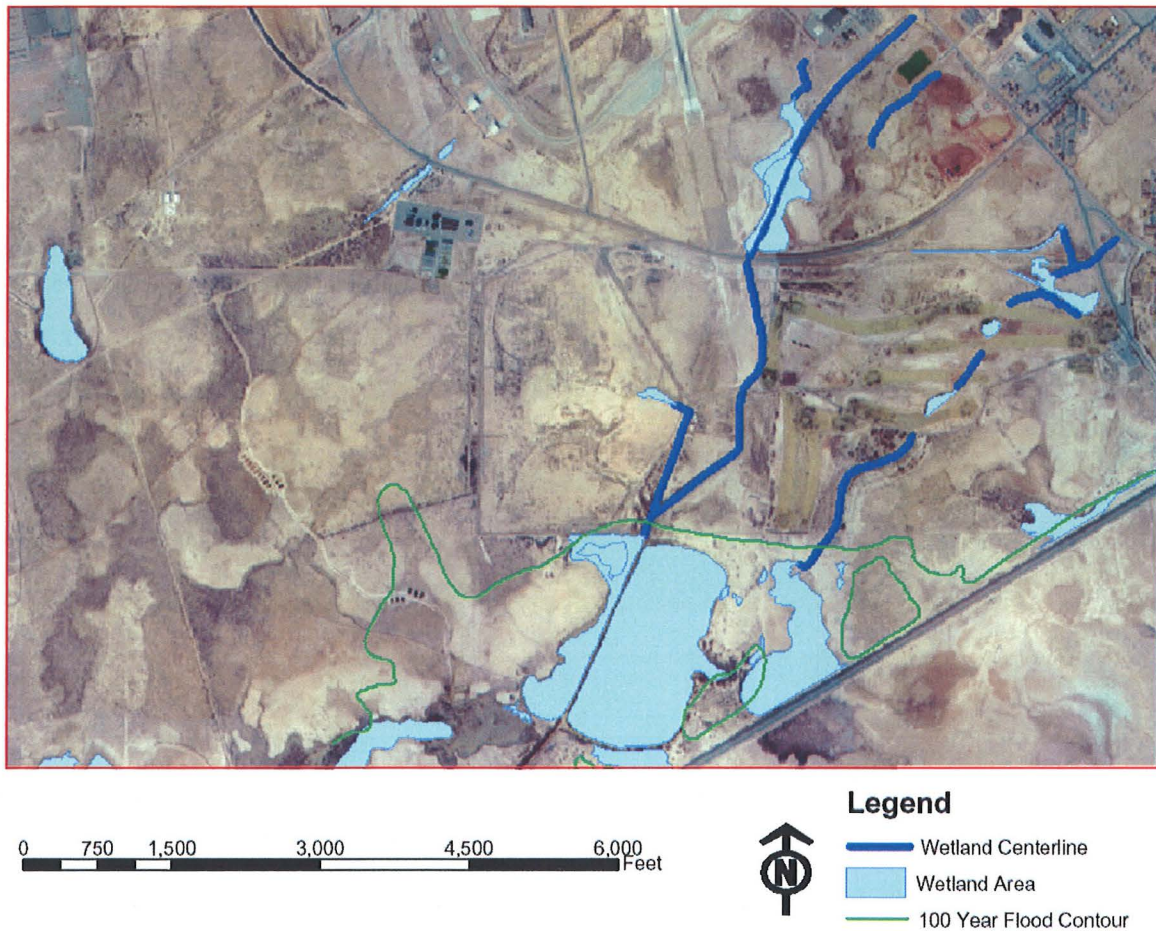
**Figure 6 Elevation Contours**

### 3.4 Water Quality

No major streams, rivers, or fresh water lakes exist in the closed Tularosa Basin (HAFB 1996). However, there are numerous protected or jurisdictional Waters of the US on base, designated by the USACE (see Figure 7). Those Waters of the US within the zone of potential impact of this project, in order of closest proximity, include:

- Two unnamed wetland areas that cross the project area.
- Lagoon G – contains water throughout the year due to continuous WWTP effluent discharge and periodic storm water flow and feeds the constructed wetland ponds to the southwest.
- Constructed Wetland Ponds – a series of four ponds managed to produce a wetland environment between Lagoon G and Lake Holloman.
- Lake Holloman - contains water throughout the year due to continuous WWTP effluent discharge and storm water flow.

- Stinky Playa - intermittently holds water and is a downstream overflow south of Lake Holloman.



**Figure 7 Wetland Areas**

There are two areas of concern that are crossed by Forty-Niner Avenue. First, an unnamed Waters of the US crosses the roadway on the eastern edge of the project area. This Waters of the US flows through culverts under the roadway, and has a length of 6,191 feet (HAFB 1996). Second, on the western end of the project area is an unnamed wetland described as a vegetative depression for flight line drainage with an area of 1.07 acres.

Storm water is sheet flow runoff resulting in ephemeral streams generated from rainfall, roughly the same definition as surface water in the Tularosa Basin. HAFB receives approximately 8 to 10 inches of annual average rainfall (HAFB 1996). However, storms typically deposit a significant amount of rain (up to 2 inches) in a short time period over a limited area in the June through September 'monsoon' period. Lake Holloman, Lagoon G, the two unnamed wetland areas, and Stinky Playa are noteworthy Waters of the US in the project area that receive HAFB storm water. These waters are protected by the CWA

USACE 401-404 permit, and July 2003 NPDES General Permit for Discharges from Large and Small Construction Activities.

The groundwater on the base and the surrounding central Tularosa Basin is considered unfit for human consumption on the basis of New Mexico Water Quality Control Regulations for total dissolved solids and sulfates (HAFB 1998). Any effects to the groundwater of the area due to this project would have no impact on drinking water. Impacts to drinking water will undergo no further analysis.

### **3.5 Air Quality**

HAFB is located in Otero County, a portion of New Mexico Air Quality Control Region 153, and is classified as attainment for all criteria air pollutants with primary and secondary National Ambient Air Quality Standards (NAAQS) as stated in 40 CFR 81.332. Primary standards are established to protect public health from adverse impacts of air pollution. Secondary standards are established to protect the public welfare from adverse impacts of air pollution. Conformity analysis for the proposed project is not required for routine repair and maintenance activities, including repair and maintenance of roads as stated in 40 CFR 93.153(c)(iv).

### **3.6 Cultural Resources**

HAFB has been completely surveyed for cultural resources such as archaeological sites (Hawthorne 1994), historic buildings (Ernst 1997), locations of important events (HAFB 1994), and traditional cultural properties (O'Leary 1994). No cultural resources are located within the area of influence for the proposed project. These resources will not be considered further in this EA.

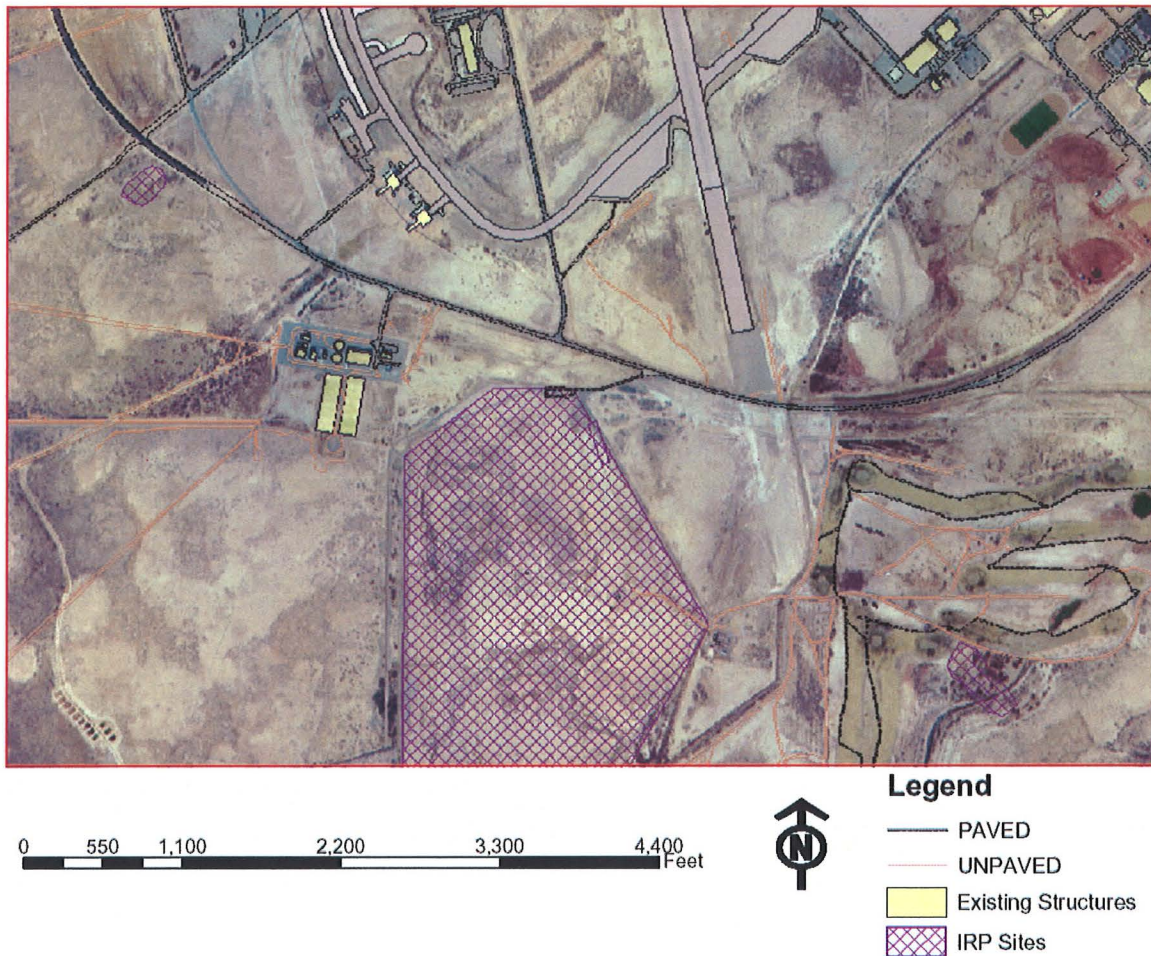
### **3.7 Environmental Restoration Sites (ERPs)**

Two ERP sites are in the area of the proposed project (HAFB 2003). LF-21, the West Area Landfill #2, is located at the western edge of the project area, south of Forty-Niner Avenue. WP-49, the closed Sewage Lagoons, is located directly south of Bong Street on the southern side of Forty-Niner Avenue. (See Figure 8 for locations).

LF-21 covered an area of 1 to 2 acres and was active from the early 1970s until 1977. Records indicate that waste materials contained at the site included paper bags, food cans, boxes, boards, tree limbs, and possible 55-gallon drums. The site was first identified in 1983. Four monitoring wells were installed in 1992. Site closeout with long-term monitoring through 2005 was recommended and approved for this site in the Decision Document (DD) by NMED in September in 1994.

WP-49 covers an area of over 100 acres that encompasses seven closed sewage lagoons. The lagoons received domestic and industrial wastewater. These wastewaters are known to have contained volatile organic compounds, semi-volatile organic compounds, pesticides, polychlorinated biphenyls, and metals. A groundwater monitoring system was

installed in 1989. The lagoons do not appear to have significantly affected the groundwater. A soil cover was placed over the lagoons in 1998. A DD with long-term monitoring requirements closing the site was signed by NMED in 2000. However, NMED has since released the base from long-term monitoring requirements.



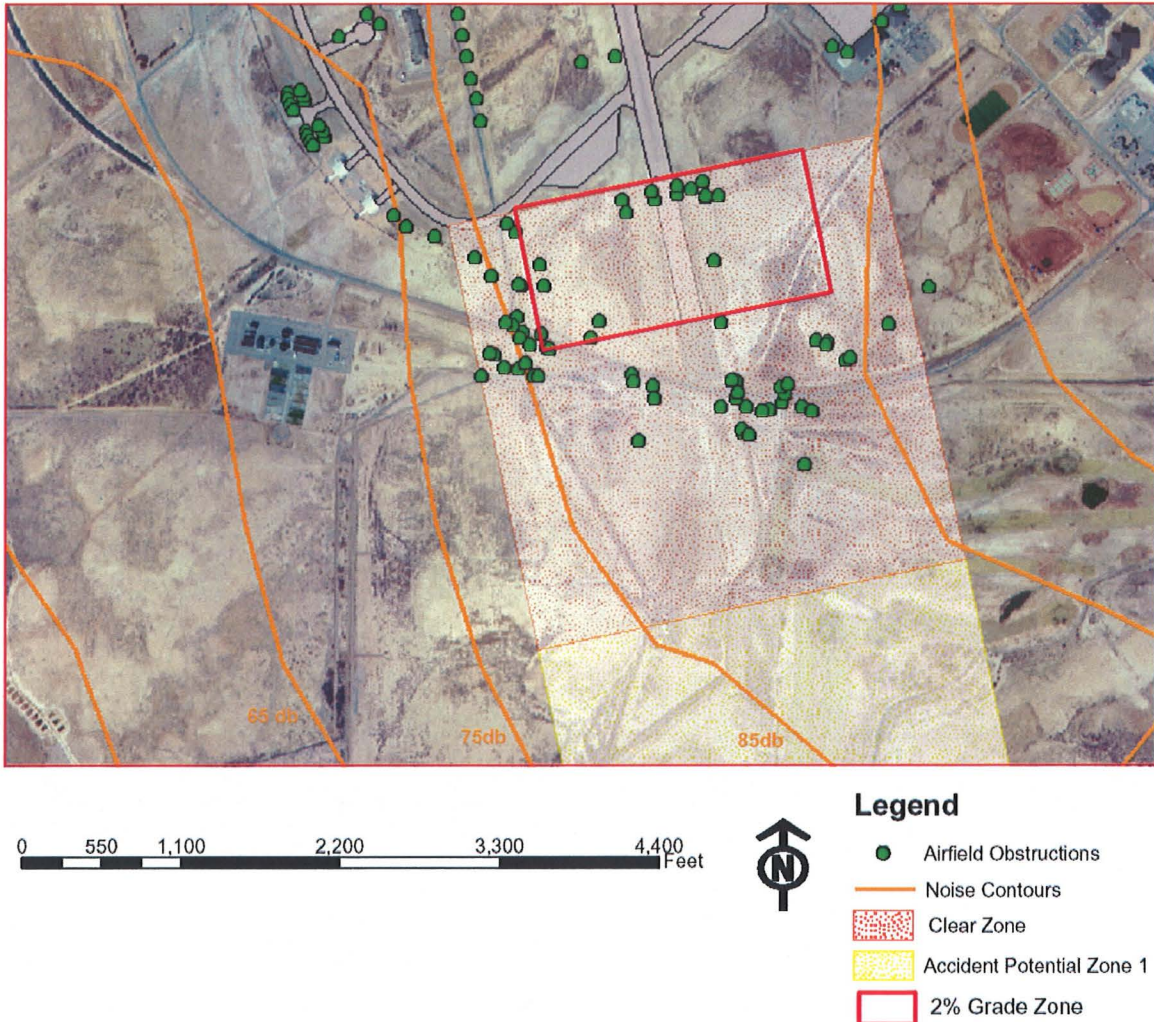
**Figure 8 Environmental Restoration Sites**

### **3.8 Land Use Criteria**

The landform criteria for this proposed project area are regulated by the following documents and are shown in Figure 9.

- UFC 3-260-01, Airfield and Heliport Planning and Design.
- Air Force Instruction (AFI) 32-7063, Air Installation Compatible Use Zone Program (AICUZ)
- Air Force Handbook (AFH) 32-7084, AICUZ Program Manager's Guide

A significant portion of the proposed project is within the Clear Zone at the end of Runway 16/34. The Clear Zone is defined as a 3,000-foot by 3,000-foot area centered on the runway centerline and starting at the runway's primary surface. This zone consists of two different areas, the graded area and a land use control area.



**Figure 9 Land Use**

The land use control area is intended to protect people on the ground. USAF land use guidelines are provided by the AICUZ program. Although it is desirable to clear and grade this zone, it is not required.

The graded area of the Clear Zone is prepared and maintained for aircraft safety, and must comply with the criteria presented in UFC-3-260-01. The graded area is 1,000 feet in length by the width of the primary surface. This area must be cleared of stumps and be free of abrupt surface irregularities, ditches, and ponding areas. No above ground structures, objects, or roadways are permitted in the area to be graded. The grade of the area cannot exceed 10 percent of the overrun grade. Additionally, the grade change

cannot exceed  $\pm 2$  percent per 100 feet. The transfer from the graded area to the remainder of the Clear Zone must be made as gradual as possible.

The Zone of Frangibility is 500-feet wide by 3,000-feet long. It is centered along the runway centerline and runs the entire length of the Clear Zone. All items that must be sited in the Zone of Frangibility due to their function must be made frangible. Any items that cannot be removed from the Zone of Frangibility or made frangible must be waived by the Major Command before construction begins.

As the proposed project is located at the end of a runway, high noises will be present (HAFB 2004a). The entire project area is within the 65 Day-Night Average A-Weighted Sound Level (DNL). The area south of the runway is in the 85+ DNL.

### **3.9 Waste Generation**

Hazardous wastes generated on HAFB are managed according to the HAFB Hazardous Waste Management Plan (HAFB 2004c). Generators of hazardous waste are responsible for segregating, storing, labeling, marking, packaging, and transferring all hazardous waste according to federal, state, local and Air Force regulations. Wastes generated on base are managed under the regulations set forth in the HAFB Resource Conservation and Recovery Act Part B Storage Permit. As no hazardous waste generation is anticipated for this proposed action, and management plans are in place should any hazardous waste be generated, no significant impacts are expected. Hazardous waste generation will not undergo further analysis.

Solid wastes generated on HAFB are managed according to the HAFB Solid Waste Management Plan (HAFB 2004b). Solid waste generated is disposed of at the Lincoln/Otero County Regional Landfill. As any solid waste generated during this project will be managed in accordance with applicable management plans and regulations, no significant impacts are expected. Solid waste generation will not undergo further analysis.

## **4.0 Environmental Consequences**

### **4.1 Introduction**

The proposed alternatives will have impacts on the existing environment. All resource impacts for an alternative have been grouped together. These impacts include direct and indirect effects. Cumulative effects of the actions are addressed in Chapter 5.0.

The effects described in the following sections have been accepted assuming that all BMPs discussed during the description of actions will be followed. Failure to follow BMPs could result in environmental effects not identified during this EA.

### **4.2 Impacts of Preferred Alternative**

#### **4.2.1 Biological Resources**

There would be no significant effect on the flora or fauna of the area as a result of implementing the preferred alternative. Invasive weed species would continue to spread through the area.

Although classified as wetlands or Waters of the US the drainage ditches in the project area have little value for native plants and wildlife. There are several similar drainage ditches on base, and the areas to be disturbed are immediately adjacent to an existing roadway. Potential impacts to wetlands downstream from the project area are unlikely. Existing vegetation in the ditches and the distance to downstream wetlands would slow surface water flow, allowing any sediment to settle before reaching the wetlands. Any interference to habitat or wildlife that may occur would be temporary. Disturbance to these drainage ditches would have no significant impact on downstream wetland habitat or wildlife.

#### **4.2.2 Geology**

The proposed project area consists of previously disturbed soil. Construction activity would not disturb any native areas. Erosion to top soil would be controlled by the storm water BMPs employed at the area. No digging or boring would occur, leaving the hydrogeologic properties of the area in their current state.

The temporary bypass roads would deposit approximately 1,700 cubic yards of crushed concrete onto the area. Any unreacted silicates in the crushed concrete would rapidly react with water in the high gypsum soils of the project area United States Federal Highway Administration (USFHA) 2004. The crushed concrete would cure and become hard again. Combined with the compacting effects of traffic over the roads, this crushed concrete could become very difficult to remove at the project's completion.

The curing reaction between silicates, water, and gypsum could cause the pH in the immediate area to drop to approximately 11, a very basic solution USFHA 2004. Storm water with this low of a pH could have a negative effect on the fauna of down gradient areas. However, properly installed BMPs would prevent movement of storm water from the area. These effects would be temporary as the concrete would be removed upon the completion of the project. If the solution soaks into the ground, it would have no significant impact on the alkaline soils of the area.

#### **4.2.3 Water Quality**

Construction within the wetland areas and Waters of the US during this alternative would require USACE 401-404 permit.

Construction project impacts to storm water quality can range from minor to severe. For this project, impacts are anticipated to be moderate if BMPs are adequately applied. In the desert southwest, whenever vegetative cover and soils are disturbed, violent storm events become even more erosive. The limited natural cover in place provides some protection and retention capacity for the highly erosive silty loam soils at HAFB. Erosive impacts are caused by widespread devegetation (clearing and grubbing), clearing in highly erosive soils, and clearing/earthwork during storm seasons. Even with the shallow topography, broad erosive features can develop in a single summer storm. These events cause depleted water quality at ephemeral stream junctions and nearby monitored outfalls. High turbidity, suspended solids, and decreased cross section due to deposition may violate storm water quality benchmarks and result in a Notice of Violation (NOV) for storm water quality permits.

Besides erosive impacts, construction period activities can cause much more severe water quality impacts. Improper fuel, oil, and chemical storage, conveyance, and loading/unloading can readily contaminate receiving waters in a single event. These are of potentially short duration but high impact events, typically categorized as accidental spills.

Engineered controls must be implemented as part of these projects to avoid additive impacts. All impacts as discussed may be significantly reduced by implementation of proper BMPs. BMPs are discussed in detail in Section 2.3.

#### **4.2.4 Air Quality**

The Preferred Alternative would have some negative impacts on air quality due to construction emissions. These temporary emissions from construction vehicle emissions would not cause or contribute to a violation of the NAAQS and would not impair visibility in Class I Areas. EPA guidance for assessing air quality impact allows for the exclusion of temporary construction emissions from the evaluation of impacts and conducting the subsequent air quality analysis (USEPA 1990).

Air quality emissions would result from construction activities such as grading, digging, and construction vehicle emissions that are transient or temporary emissions. The crushed concrete used for the temporary bypass roads would release dust as traffic passed over them. Impacts of these construction activities would be limited in duration, affect only the base because of the previously discussed BMPs and, therefore, not significant.

#### **4.2.5 ERP Sites**

There would be no impact to ERP sites as a result of actions associated with the Preferred Alternative.

#### **4.2.6 Land Use Criteria**

Construction of new airfield obstructions within the Clear Zone shall be avoided throughout the project. The new shoulders on Forty-Niner Avenue shall be graded to meet the 10 percent requirement within the Clear Zone. The sides of the temporary bypass roads should be graded to avoid abrupt edges. Drainage ditches and culvert inlets modified during construction need to be graded as gradually as possible. By adhering to these requirements, the number of airfield obstruction violations would be reduced by this alternative.

During construction, no equipment or materials shall be stored within the Clear Zone. Staging areas and construction yards must be located outside of this regulated area. Temporary construction items, such as storm water controls and bypass roads, must comply with all grading and frangibility requirements.

### **4.3 Impacts of Alternative B: Lane Closure**

#### **4.3.1 Biological Resources**

There would be no significant effect on the flora or fauna of the area as a result of this alternative. Invasive weed species would continue to spread through the area.

Although classified as wetlands or Waters of the US, the drainage ditches in the project area have little value for native plants and wildlife. There are several similar drainage ditches on base, and the areas to be disturbed are immediately adjacent to an existing roadway. Potential impacts to wetlands downstream from the project area are unlikely. Existing vegetation in the ditches and the distance to downstream wetlands would slow surface water flow, allowing any sediment to settle before reaching the wetlands. Any interference to habitat or wildlife that may occur would be temporary. Disturbance to these drainage ditches would have no significant impact on downstream wetland habitat or wildlife.

#### **4.3.2 Geology**

The proposed project area consists of previously disturbed soil. Construction activity would not disturb any native areas. Erosion to top soil would be controlled by the storm water BMPs employed at the area. No digging or boring would occur, leaving the hydrogeologic properties of the area in their current state. No significant impacts are anticipated due to this alternative.

#### **4.3.2 Quality**

Construction near or in a wetland or Waters of the US requires a USACE 401-404 permit.

Construction project impacts to storm water quality can range from minor to severe. For this project, impacts are anticipated to be moderate if BMPs are adequately applied. In the desert southwest, whenever vegetative cover and soils are disturbed, violent storm events become even more erosive. The limited natural cover in place provides some protection and retention capacity for the highly erosive silty loam soils at HAFB. Erosive impacts are caused by widespread devegetation (clearing and grubbing), clearing in highly erosive soils, and clearing/earthwork during storm seasons. Even with the shallow topography, broad erosive features can develop in a single summer storm. These events cause depleted water quality at ephemeral stream junctions and nearby monitored outfalls. Turbidity, suspended solids, and decreased cross section due to deposition can violate storm water quality benchmarks and result in a NOV for storm water quality permits.

Besides erosive impacts, construction period activities can cause much more severe water quality impacts. Improper fuel, oil, and chemical storage, conveyance, and loading/unloading can readily contaminate receiving waters in a single event. These are of potentially short duration but high impact events, typically categorized as accidental spills.

Engineered controls must be implemented as part of these projects to avoid additive impacts. All impacts as discussed may be significantly reduced by implementation of proper BMPs. BMPs are discussed in detail in Section 2.3.

#### **4.3.4 Air Quality**

Alternative B would have some negative impacts on air quality due to construction emissions. These temporary emissions from construction vehicle emissions would not cause or contribute to a violation of the NAAQS and would not impair visibility in Class I Areas. EPA guidance for assessing air quality impact allows for the exclusion of temporary construction emissions from the evaluation of impacts and conducting the subsequent air quality analysis (USEPA 1990).

Air quality emissions would result from construction activities such as grading, digging, and construction vehicle emissions that are transient or temporary emissions. Impacts of these construction activities would be limited in duration and limited locally on base because of the previously discussed BMPs and, therefore, not significant.

#### **4.3.5 ERP Sites**

There would be no effect on ERP sites as a result of the actions associated with Alternative B.

#### **4.3.6 Land Use Criteria**

Construction of new airfield obstructions within the Clear Zone shall be avoided throughout the project. The new shoulders on Forty-Niner Avenue shall be graded to meet the 10 percent requirement within the Clear Zone. By adhering to these requirements, the number of airfield obstruction violations would be reduced by this alternative.

During construction, no equipment or materials shall be stored within the Clear Zone. Staging areas and construction yards must be located outside of this regulated area. Temporary construction items, such as storm water control and bypass roads, must comply with all grading and frangibility requirements.

### **4.4 Impacts of Alternative C: No Action**

#### **4.4.1 Biological Resources**

There would be no effect on the flora or fauna of the area as a result of taking no action on this proposed project. Invasive weed species would continue to spread through the area.

#### **4.4.2 Geology**

There would be no effect on the geology of the area as a result of taking no action on this proposed project.

#### **4.4.3 Water Quality**

Current storm water and water quality conditions on HAFB are within all regulations. There would be no negative effects to these systems by taking no action on this proposed project. However, the opportunity to improve drainage and reduce ponding in the area would not occur. Future projects would have to address these issues.

#### **4.4.4 Air Quality**

There would be no effect on the attainment status of HAFB as a result of taking no action on this proposed project.

#### **4.4.5 ERP Sites**

There would be no effect on ERP sites as a result of taking no action on this proposed project.

#### **4.4.6 Land Use Criteria**

There would be no effect on landform criteria as a result of taking no action on this proposed project. The opportunity to remove various airfield obstructions in the area would not occur. Future projects would have to address these issues.

## **5.0 Cumulative Environmental Impacts**

### **5.1 Introduction**

Cumulative impacts are those environmental impacts that result from the incremental effects of the proposed action when compounded by other past, present, or reasonably foreseeable future actions (40 CFR 1508.7). Projects in the proposed action's area include the following.

- **BEAR Base Improvements:** The 49th Materiel Maintenance Group has proposed a phased development of their BEAR Base compound over the next several years. Short-range projects include expanding training areas, repairing a ramp and some roadways, enclosing a drainage ditch, and expanding Building 953. Future developments would include a ramp extension, expanding mobility training, and increase storage capacity in the compound. An EA of these proposals has been completed.
- **Golf Course Addition:** This project would remove three fairways that are partially within the runway clear zone. It would add 12 holes outside of the clear zone to provide an 18-hole golf course. The existing clubhouse would be demolished and replaced with a new building and parking area. This proposal is currently undergoing a separate EA.
- **Softball Fields Improvements:** This proposal includes installation of artificial turf and a new parking lot between Johnson and Vandenberg fields. The proposed parking lot would have 75 to 100 parking spaces. The artificial turf is of the same type that has been installed on separate fields on base.

The effect of these projects would be to increase the amount of impermeable surfaces in the area. This would increase storm water runoff volume and velocity. All construction, facility sites, and associated infrastructure would mitigate storm water runoff with appropriate BMPs. Temporary noise increases associated with construction would be noticeable in the immediate site vicinity, but the overall environment would remain relatively unchanged. No significant impacts are anticipated.

### **5.2 Irreversible and Irretrievable Commitment of Resources**

For the proposed action, irreversible or irretrievable commitments of resources would be typical of any construction project. Construction vehicles would consume energy such as gasoline and electricity. A minimal amount of soil would be lost through either wind or water erosion. Base productivity would temporarily be interrupted due to traffic delays and temporary moderate increases in levels of noise due to construction activity. There are no anticipated significant commitments of irreversible or irretrievable resources.

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